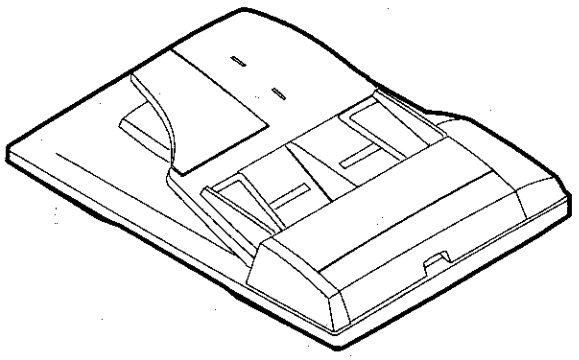
SHARP SERVICE MANUAL

CODE : 00ZARRP1//A1E



Digital Copier Reverse Single Pass Feeder (RSPF)

MODEL AR-RP1

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Parts marked with "⚠" is important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

SHARP CORPORATION

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The contents are subject to change without notice.

[1] PRODUCT OUTLINE

This machine is a duplex document auto feeder attached to a digital copier.

It feeds originals automatically to allow continuous copying.

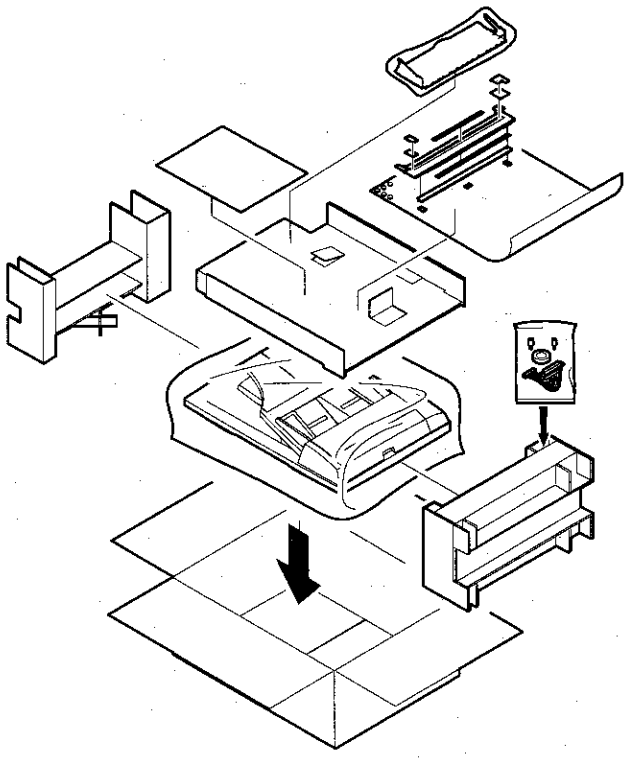
[2] SPECIFICATIONS

Document set direction	Face up
Document set position	Center reference
Document transport system	Sheet through type
Document feed sequence	Top take-up feed
Document size	AB series: A3 ~ A5 Inch series: 11 x 17 ~ 8.5 x 5.5 Duplex invoice not available
Document weight	56 ~ 90g/m^2, 11 ~ 23.9lbs
Document set quantity	Max. 30 sheets (90g/m^2, max. thickness 4mm)
Dimensions	583mm (W) x 435mm (D) x 131mm (H)
Weight	About 5.4 kg
Power source	Supplied from the copier.
Document size detection	On the document feed tray
Detection size	Japan: A3, B4, A4, A4R, B5, B5R Inch series: 11 x 17, 8.5 x 14, 8.5 x 11, 8.5 x 11R, 8.5 x 5.5 EX AB series: A3, B4, A4, A4R, A5
Multi copy	Without E-Sort PWB installed: S →S enable, S →D disable D →D disable, D →S enable With E-Sort PWB installed: S →S enable, S →D enable, D →D enable, D →S enable
Mixture of different document sizes	Mixture paper feed : Not available during copying. Available during FAX (same width only)
Random paper feed	Not available
Document reverse	Not allowed
Display section (LED)	None
Document exchange speed	S →S 16 sheets/min

[3] UNPACKING AND INSTALLATION

1. Unpacking

For unpacking, refer to the figure below.

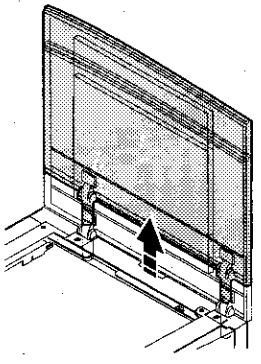


Name	Q'ty
Core	1
Cushion	1
SPF glass holding cover	1
SPF harness	1
Intermediate tray (AR-RP1)	1
Step screw	2
Manual	1

2. Installation

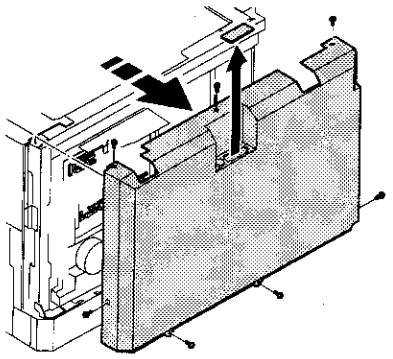
1) Remove the document cover.

   Lift the document cover and remove it from the copier.

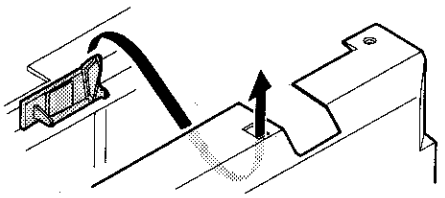


2) Remove the rear cabinet of the copier.

Remove the seven screws and remove the cabinet. Remove the connector cover.

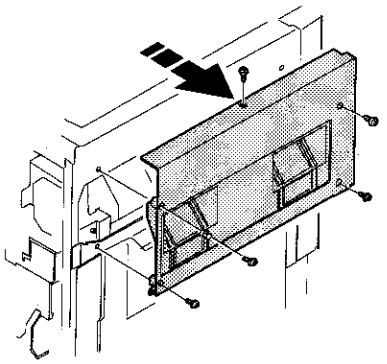


* If a open/close detection is attached, be careful not to break the actuator.



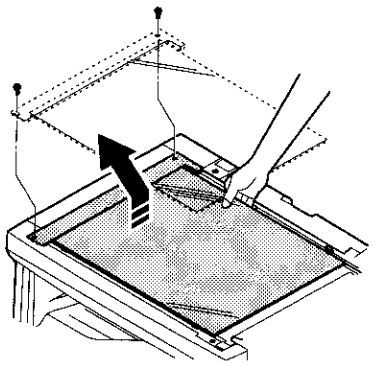
3) Remove the right cabinet.

Remove the five screws.



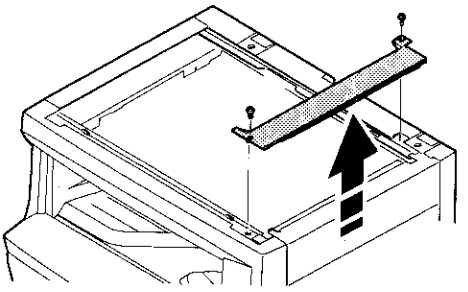
4) Remove the document glass holder (left side) and the document glass.

Remove the two screws and carefully remove the document glass holder (left side) and the document glass. Do not separate the glass and holder.



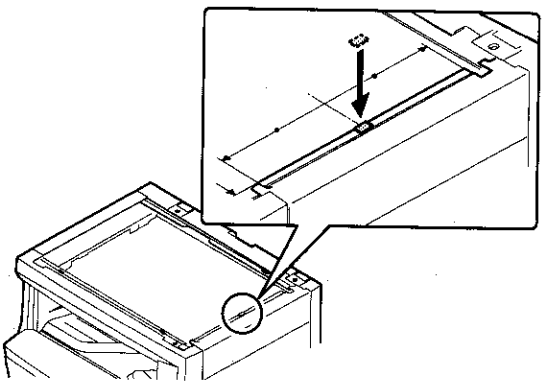
5) Remove the document glass holder cover (right side).

Remove the two screws.



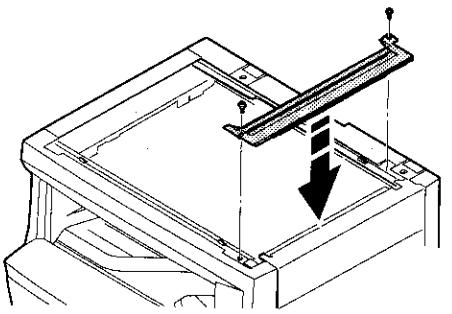
6) Attach the cushion (one position).

Remove the cover of the double-sided adhesive tape and paste the cushion taking care not to allow it to extend over the plate edges.



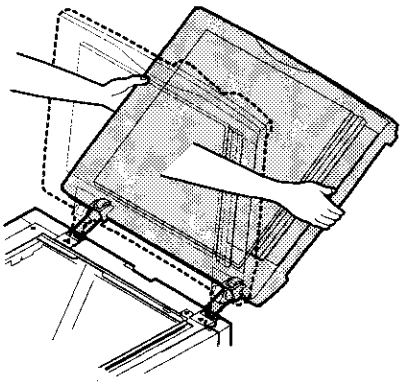
7) Attach the SPF glass holder cover.

After attaching the SPF glass holding cover, attach the document glass.



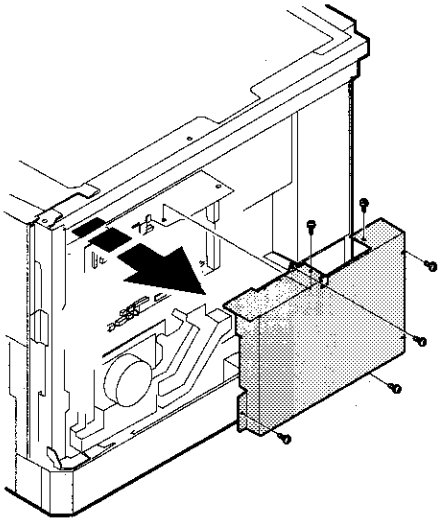
8) Install the SPF to the copier.

Tilt the SPF backward and insert the hinges into the hinge guides.



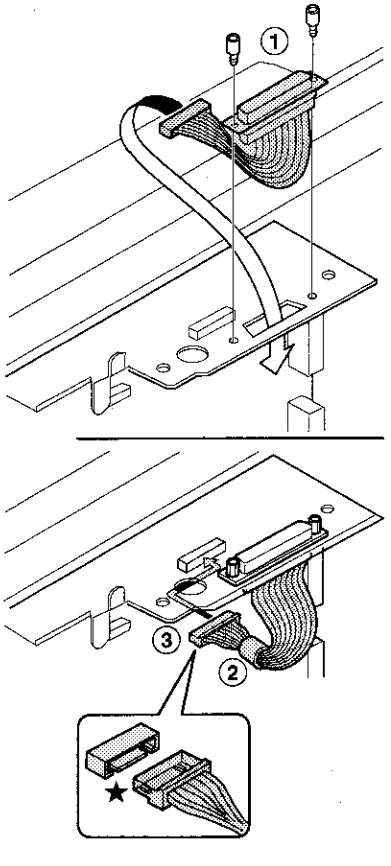
9) Remove the PWB shield plate.

Remove the six screws.



10) Install the SPF harness and the ring core (included together with the unit).

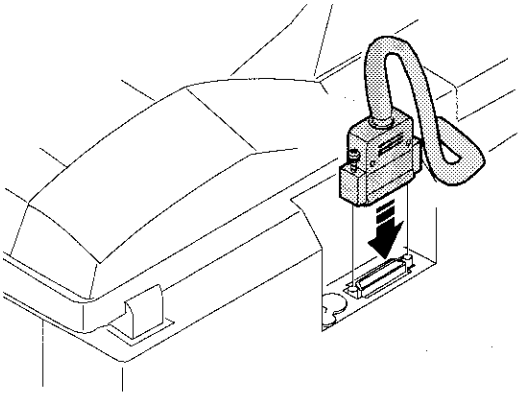
Pass the SPF harness through the plate hole from the above and fix it to the plate with the supplied two hex cap screws. (①)
Pass the SPF harness through the ring core (②), and connect it to the main PWB connector (CN11) inside the copier. (③)



★ Be careful about the direction of the connector.

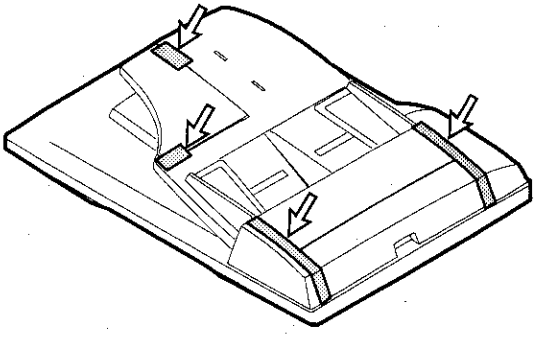
11) Install the interface harness.

Connect the interface harness from the SPF to the machine and tighten the screws.



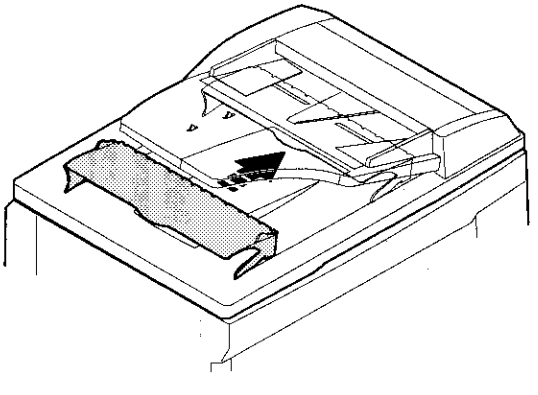
12) Remove the filament tape.

Remove the filament tape at four positions.



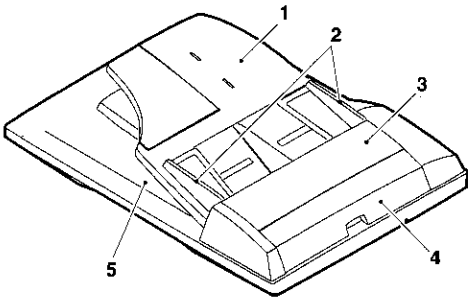
13) Install the intermediate tray in the case of RSPF.

In the case of RSPF, install the intermediate tray by pushing it to the inner part.



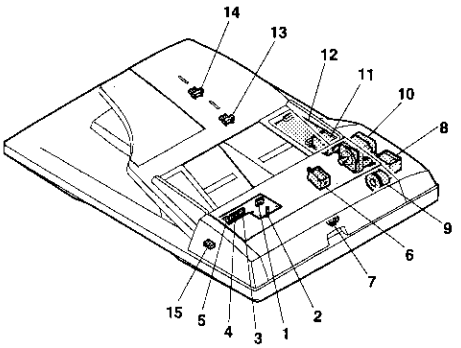
[4] EXTERNAL VIEW AND INTERNAL STRUCTURE

1. External view



No.	Name
1	Document set tray
2	Document guide
3	Document feed section cover
4	Document transport section cover
5	Document exit section

2. Internal structure

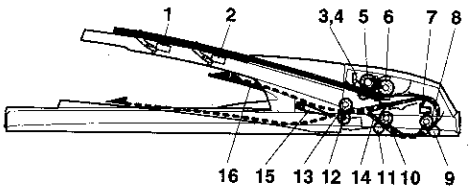


Sensor, detector, etc.

No.	Code	Name	Type	Function/Operation
1	W0	Document set sensor	Photo transmission	Detects presence of documents.
2	COVER	Open/close sensor	Photo transmission	Detects open/close of the paper feed unit.
3	W1	Document width sensor (A4R, LTR, A5)	Photo transmission	Detects the document width on the tray.
4	W2	Document width sensor (B4, B5)	Photo transmission	Detects the document width on the tray.
5	W3	Document width sensor (WL, TR, A5R, A4, LT9	Photo transmission	Detects the document width on the tray.
6	PSOL	Pickup solenoid	—	—
7	PAPER	Paper entry sensor	Photo transmission	Detects presence of documents.
8	RSOL	Pressure release solenoid	—	—
9	CLH	Transport clutch	—	—
10	MOT	SPF motor	Stepping motor	Drives document feed on the tray, transport, and paper exit roller.
11	GSOL	Gate solenoid	—	—
12	—	Interface PWB	—	—
13	L1	Document length detection SW (Short)	Photo transmission	Detects the document length on the tray.
14	L2	Document length detection SW (Long)	Photo transmission	Detects the document length on the tray.
15	COVER OPEN	Book sensor	Photo transmission	Detects the SPF float.

[5] OPEREATIONAL DESCRIPTIONS

1. Major parts of the paper fed section



No.	Part name	Operation
1	Document length sensor (L2)	Detects the document length on the tray.
2	Document length sensor (L1)	Detects the document length on the tray.
3	Document set sensor (W0)	Detects presence of documents.
4	Document width sensor (W1, W2, W3)	Detects the document width.
5	Pickup roller	Picks up documents.
6	Paper feed roller	Feeds and transports documents.
7	Paper entry sensor (PAPER)	Detects transport of documents.
8	PS roller	Makes synchronization between the document lead edge and the image lead edge.
9	PS follower roller	Makes synchronization between the document lead edge and the image lead edge.
10	Transport roller	Transports documents.
11	Transport follower roller	Transports documents.
12	Paper exit follower roller	Discharges documents.
13	Paper exit roller	Discharges documents.
14	Reverse gate	Opens/closes the document reverse path.
15	Paper exit gate	Separate document exit to the intermediate or the paper exit tray.
16	Intermediate tray	Discharges documents to the intermediate tray during document reverse.

2. Out line of operations

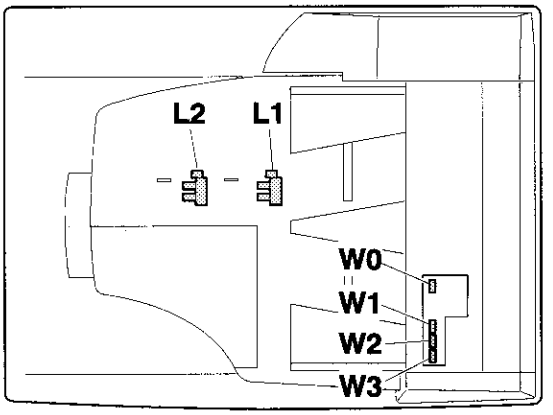
[Duplex documents]

1) Document set (Document set sensor ON)
↓
2) Document size detection (Document width sensors W1, W2, W3 detect the document width, and document length sensors L1, L2 detect the document length.)
↓
3) Copier COPY key ON
↓
4) SPF motor ON
↓
5) Pickup solenoid ON
↓
6) Pickup roller rotation
↓
7) Paper feed roller rotation
↓
8) Paper entry sensor detects the document presence.
↓
9) PS roller rotation
↓
10) Copying (Front surface of document)
↓
11) Transport roller rotation
↓
12) Paper exit roller rotation
↓
13) Paper exit gate falls down. (Documents are discharged to the intermediate tray.)
↓
14) Reverse gate falls down.
↓
15) Paper exit roller reverse rotation (Documents are fed to the reverse path.)
↓
16) Paper entry sensor detects document presence.
↓
17) PS roller rotation
↓
18) Copying (Back surface of document)
↓
19) Transport roller rotation
↓
20) Paper exit roller rotation
↓
21) Paper exit gate falls down (Documents are discharged to the intermediate tray.)
↓
22) Reverse gate falls down.
↓
23) Paper exit roller reverse rotation (Documents are fed to the reverse path.)
↓
24) Paper entry sensor detects document presence.
↓
25) PS roller rotation
↓
26) Paper exit roller rotation
↓
27) Paper exit gate lifts up.
↓
28) Documents are fed to the paper exit tray.
↓
29) Next document →(YES)→Go to 4).
↓(NO)
30) SPF motor OFF

3. Document size detection

1) Document size detection with the document set tray

When documents are set on the document set tray in the auto selection mode of paper/copy magnification ratio, the document size is detected and paper and the copy magnification ratio are automatically selected. When different sizes of documents are set, the max. size is detected. The document width is detected by the document width sensors (W1, W2, W3), and the document length is detected by the document length sensors (L1, L2) to identify the document size. Judgement of the document size is made in a certain timing after detecting the document with the document set sensor (W0).



	Document set size and set direction	Document width sensor			Document length sensor	
		W1	W2	W3	L1	L2
AB series	A5	○	●	●	●	●
	B5	○	○	●	●	●
	A5R	●	●	●	●	●
	A4	○	○	○	●	●
	B5R	●	●	●	○	●
	A4R	○	●	●	○	●
	8.5 x 13"	○	●	●	○	○
	B4	○	●	●	○	○
	A3	○	○	○	○	○
Inch series	8.5" x 5.5"	○	●	●	●	●
	8.5" x 5.5"R	●	●	●	●	●
	11" x 8.5"	○	○	○	●	●
	11" x 8.5"R	○	●	●	○	●
	8.5" x 13"	○	●	●	○	○
	8.5" x 14"	○	●	●	○	○
	11" x 17"	○	○	○	○	○

(Note) Detection sensor ON: ○ , OFF: ●

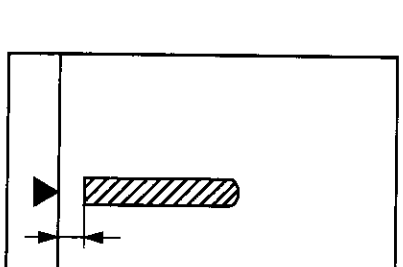
[6] ADJUSTMENTS

(1) RSPF sub scanning direction magnification ratio adjustment

Note: When performing this adjustment, check that the CCD unit is properly installed.

: When performing this adjustment, check that the OC mode adjustment in copying is completed.

1) Place a scale on the document table as shown below, and make a normal copy to make a test chart.



Note: Since the printed paper is used as the test chart, place the scale in parallel to both sides.

2) Set the test chart to the SPF and make a normal copy.

3) Compare the copy and the test chart.
If an adjustment is needed, perform the following procedures.

4) Execute SIM 8-5. The auto exposure lamp lights up.

5) After warming up, shading is performed. The current correction value of the front surface sub scanning direction magnification ratio is displayed on the display section in two digits.

6) Enter the set value, and press the START key.
The entered correction value is stored and a copy is made.

7) Change the duplex document mode to the simplex document mode.
The MANUAL lamp lights up, and the current correction value of the back surface sub scanning direction magnification ratio is displayed on the display section in two digits.

8) Enter the set value, and press the SATART key.
The entered correction value is stored and a copy is made.

<Adjustment specifications>

Mode	Spec	SIM	Set value	Set range
Sub scanning direction magnification ratio (SPF mode)	Normal: ± 1.0%	SIM 48-5	Add 1: 0.1% increase Reduce 1: 0.1% decrease	1 ~ 99

(2) SPF document off center adjustment

Note: When performing this adjustment, check that the paper off-center is properly adjusted.

1) Set the center position adjustment test chart (made by yourself) on the RSPF.

<Adjustment specifications>

Draw a line in the center of paper. (In the scanning direction)

2) Make a normal copy from the manual feed tray, and compare the copy and the test chart.
If an adjustment is required, perform the following procedures.

3) Execute SIM 50-16.

4) After warming up, shading is performed and the current off-center adjustment value at each paper feed port is displayed on the display section in two digits.

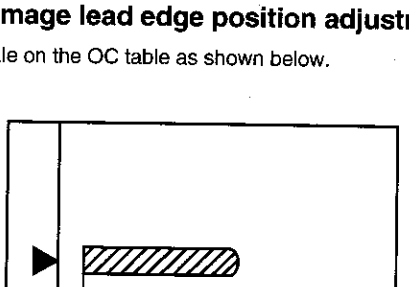
5) Enter the set value and press the START key.
The entered correction value is started and a copy is made.

<Adjustment specifications>

Mode	Specification	SIM	Set value	Set range
Document off-center (SPF mode)	Simplex: Center ± 3.0mm Duplex: Center ± 3.5mm	SIM 50-16	Add 1: 0.1mm shifted to R side. Reduce 1: 0.1mm shifted to L side.	1 ~ 99

(3) SPF image lead edge position adjustment

1) Set a scale on the OC table as shown below.



Note: Since the printed paper is used as the test chart, place the scale in parallel to both sides.

2) Make a copy, and use the copied paper as the document and make a copy from SPF again.

3) Check the copied paper. If an adjustment is required, perform the following procedures.

4) Execute SIM 50-1.

5) Set the SPF lead edge position set value (Exposure display <MANUAL> ON) so that the image similar to the adjusted image at the OC image lead edge position described previously is printed.

<Adjustment specifications>

Adjustment mode	SIM	LED	Set value	Specification	Set range
RSPF image lead edge position	SIM 50-1	MANUAL	1step: 0.127mm shift	Lead edge void: 1 ~ 4mm Image loss: 3mm or less	1 ~ 99

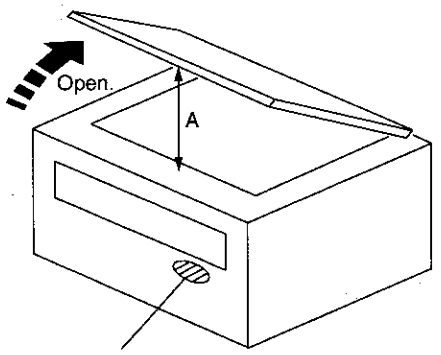
(4) OC (SPF) open/close detection position adjustment

1) Set a paper of A4 (8.5 x 11") on the OC table.
Check that the document size display on the operation panel is the same as the set paper size.

2) Close the OC (SPF) so that your hand can be inserted, and remove the paper on the OC table.
The document size display does not change from 1).

3) Gradually open the OC (SPF) until the display on the operation panel is changed. Measure the distance (A) in the figure below when the display on the operation panel is changed (all document size lamps are turned OFF).

Distance (A) = Table glass top - OC (SPF) knob rib

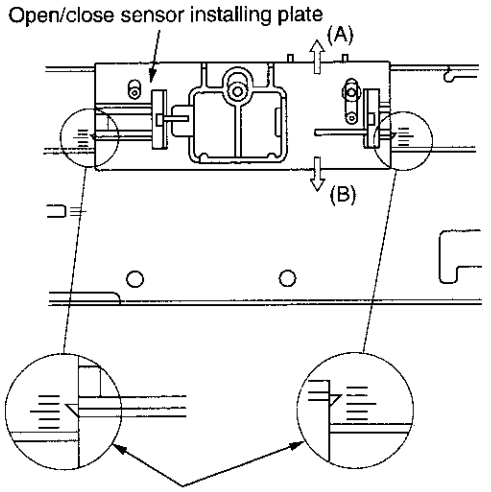


1) Check the position where the display checked in 1) is changed.

<Specifications>

OC (SPF) open/close position A : 207 ~ 302mm

4) If the OC (SPF) open/close position A is not 207 ~ 302mm, adjust the open/close sensor installing plate position shown in the figure below.

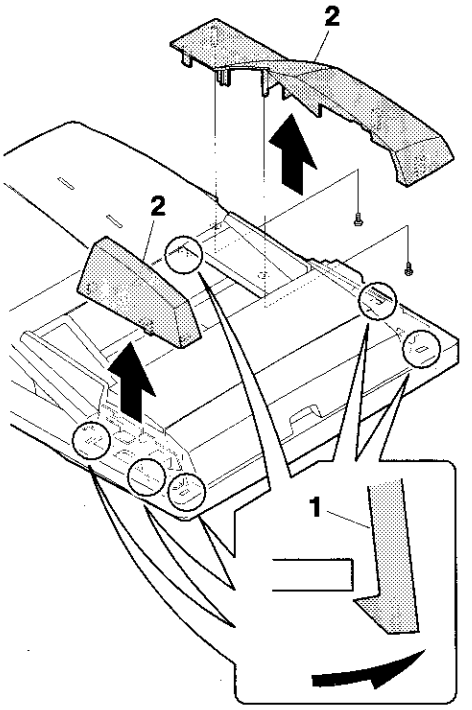


Factory setting: The second top mark

[7] DISASSEMBLY AND ASSEMBLY

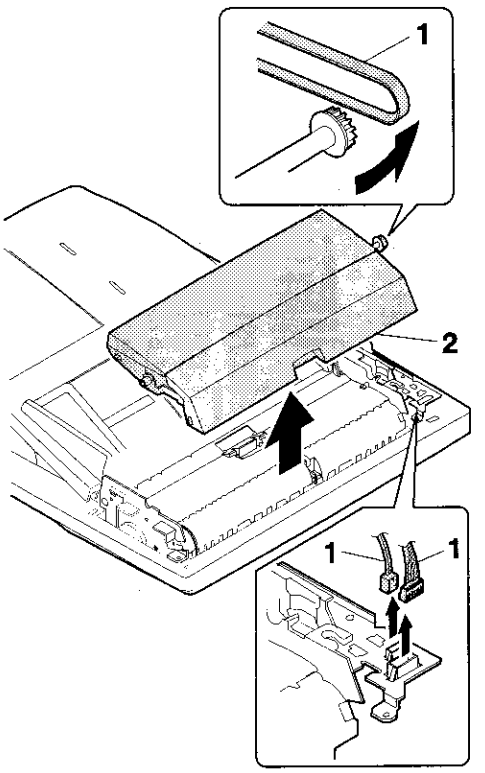
1. External fitting section

(Note) Turn the paw in the arrow direction.

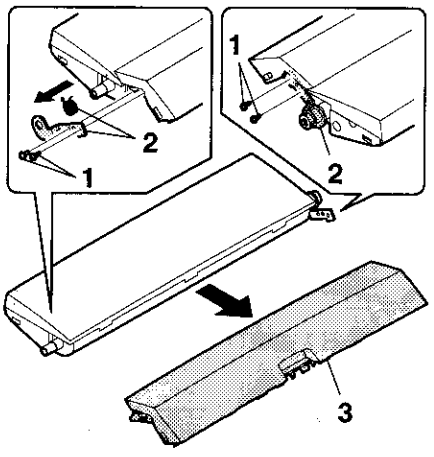


2. Paper feed unit section

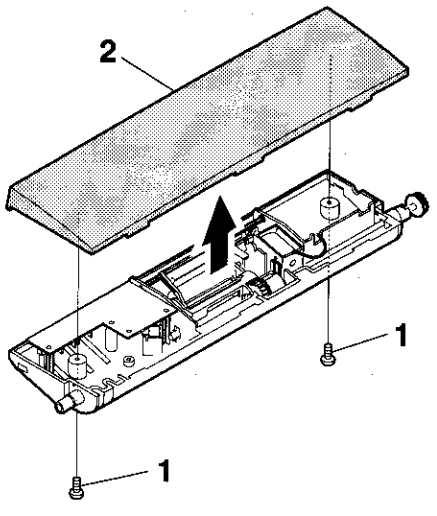
1) Paper feed unit



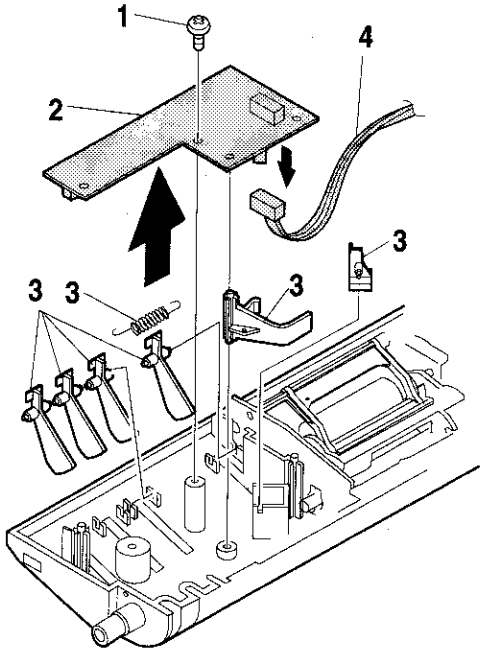
2) Document transport section cover



3) Document feed section cover

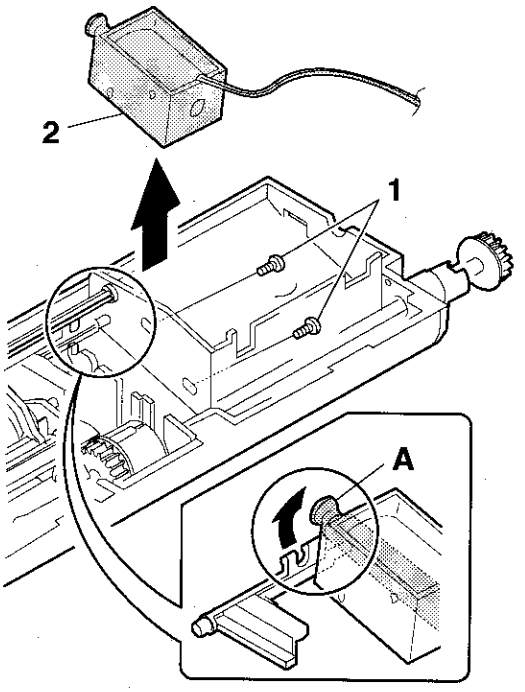


4) Sensor PWB

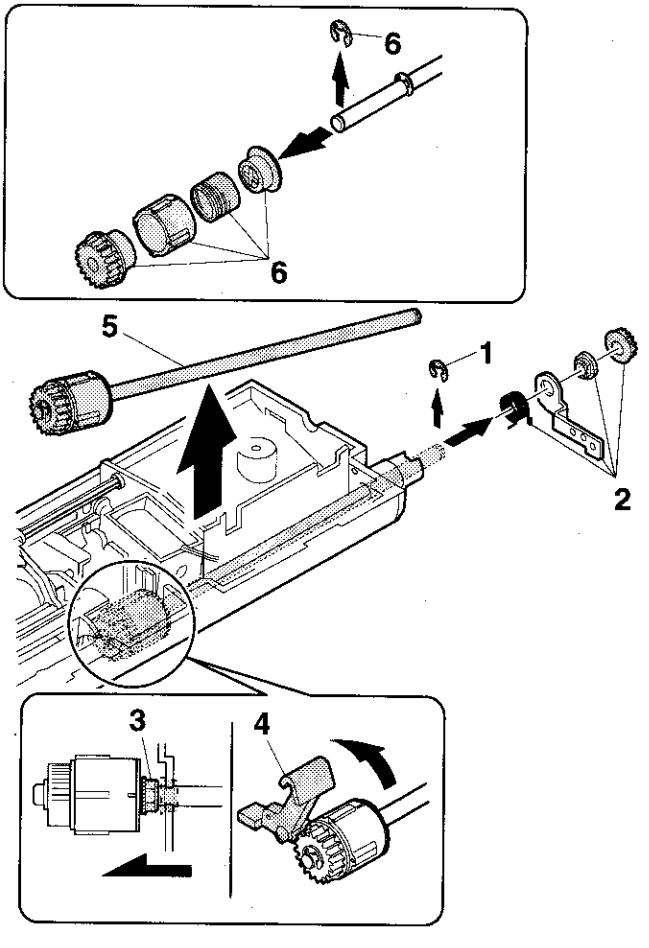


5) Pickup solenoid

(Note) Remove section A of the pickup solenoid from the solenoid arm groove.

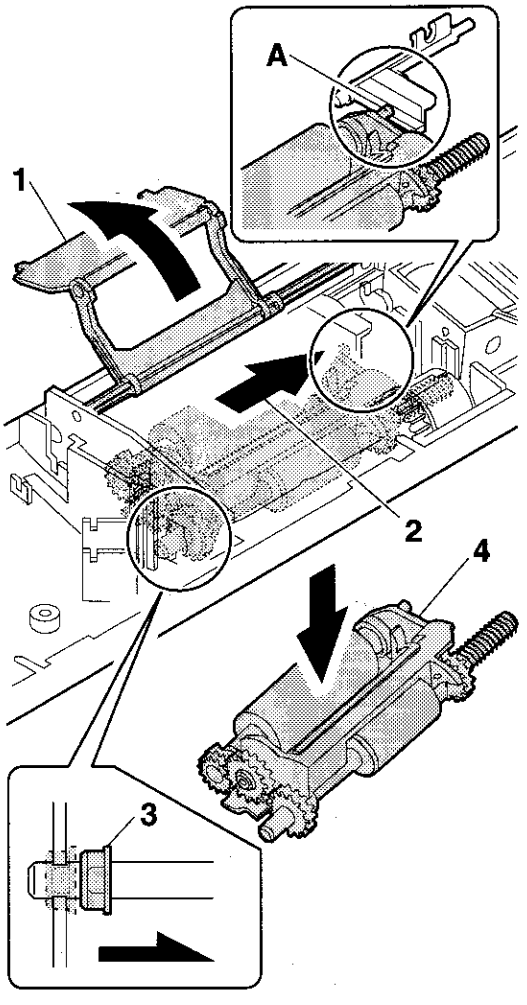


6) Clutch gear ass'y

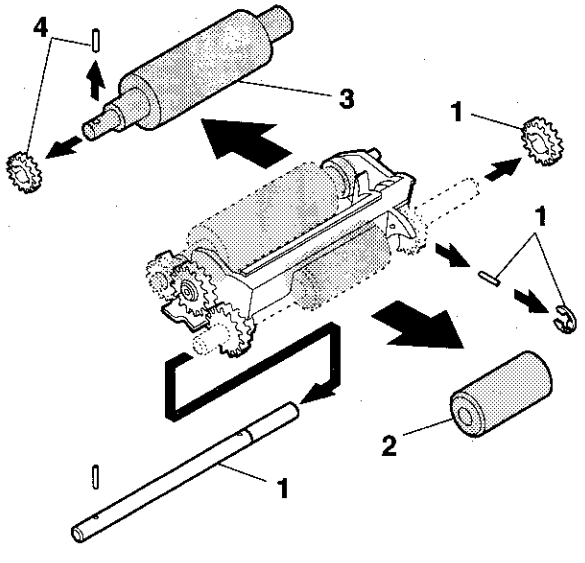


7) Pickup roller ass'y

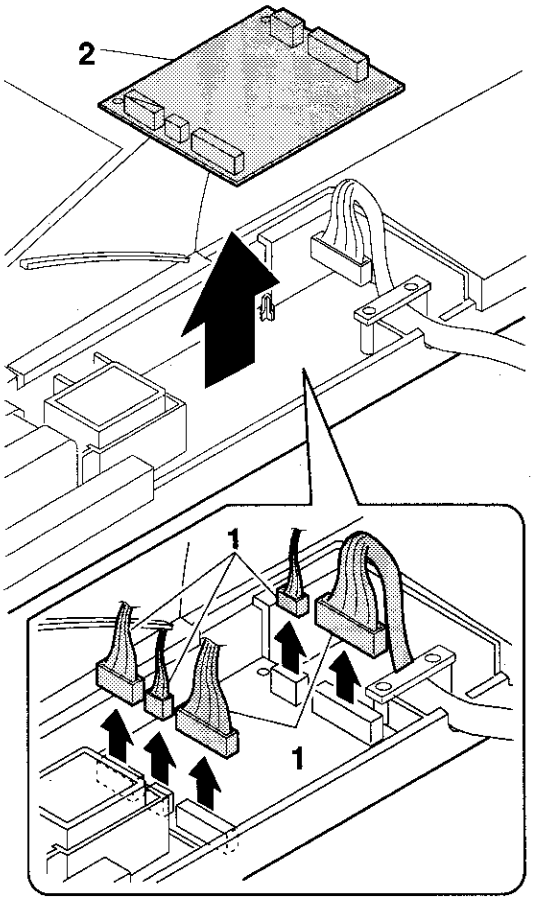
(Note) When assembling the pickup roller ass'y 4, check that rib A is on the rib of the solenoid arm.



8) Pick up roller, paper feed roller

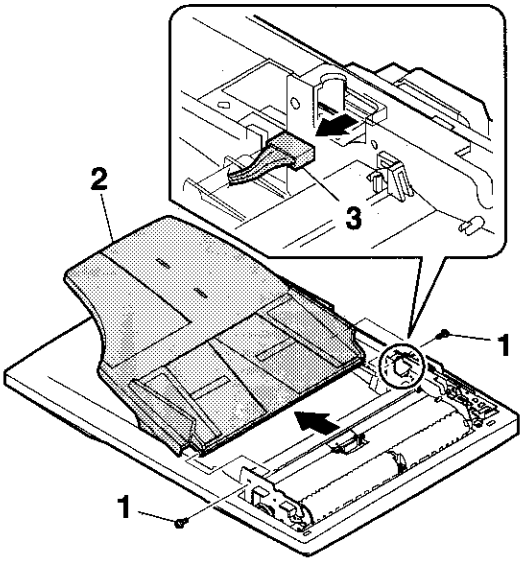


3. Interface PWB

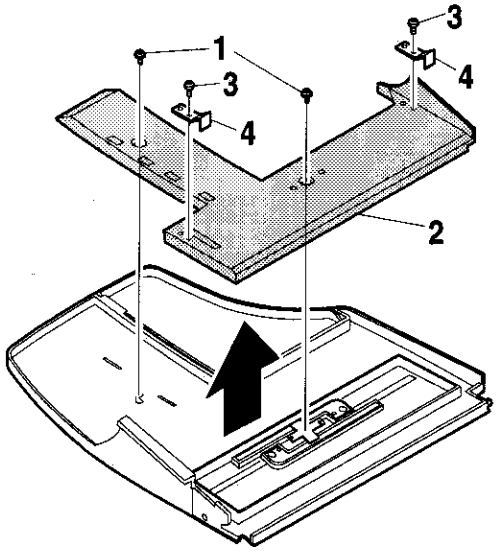


4. Document tray section

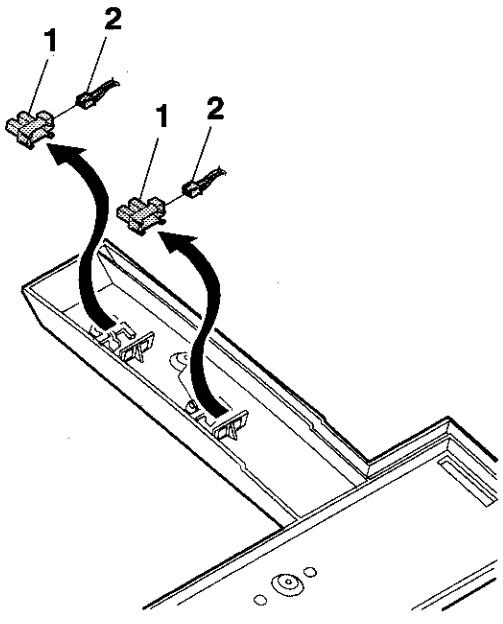
1) Document tray



2) Rack cover

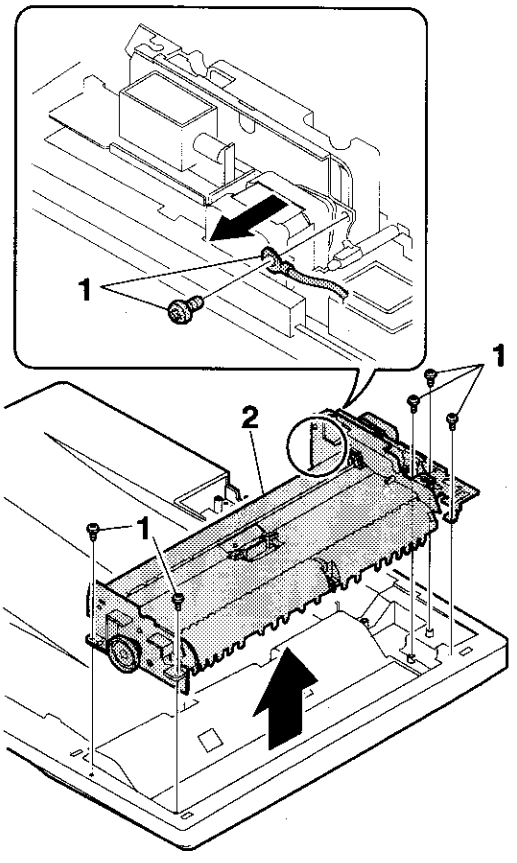


3) Document length sensor SW

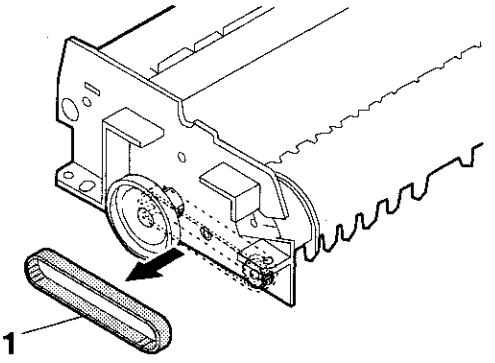


5. Drive frame section

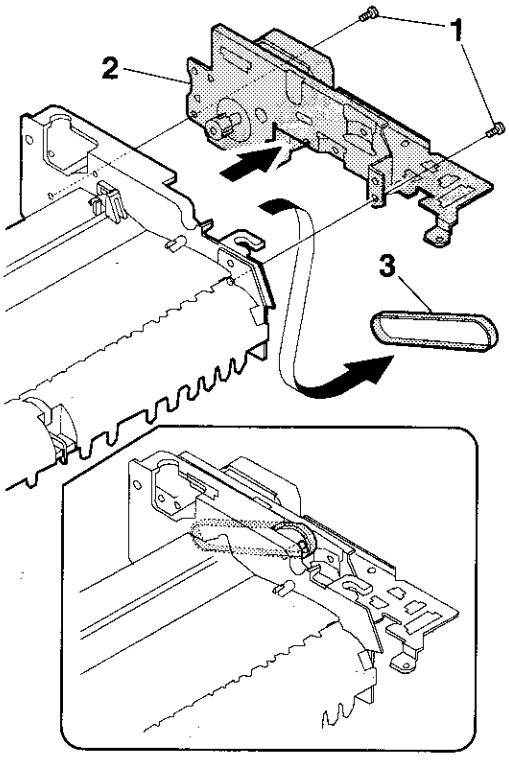
1) Drive frame unit



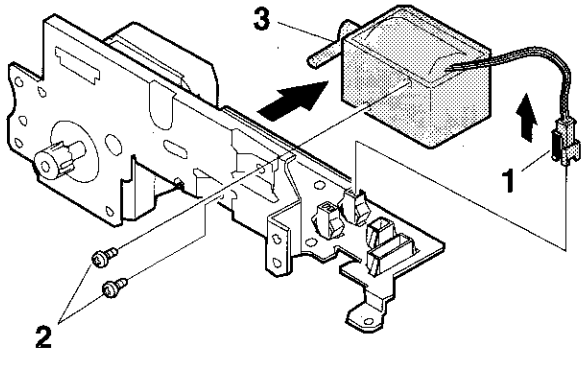
2) Transport belt



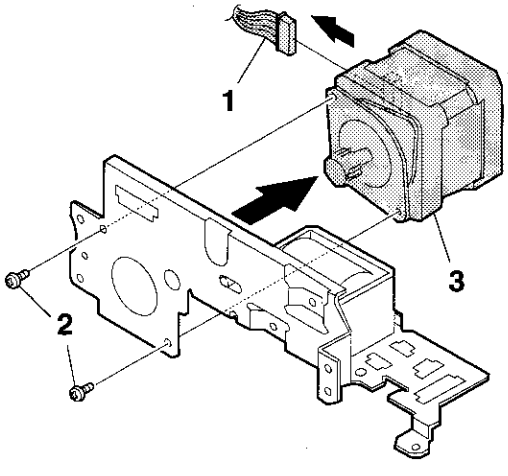
3) Drive frame ass'y and drive belt



4) Pressure release solenoid



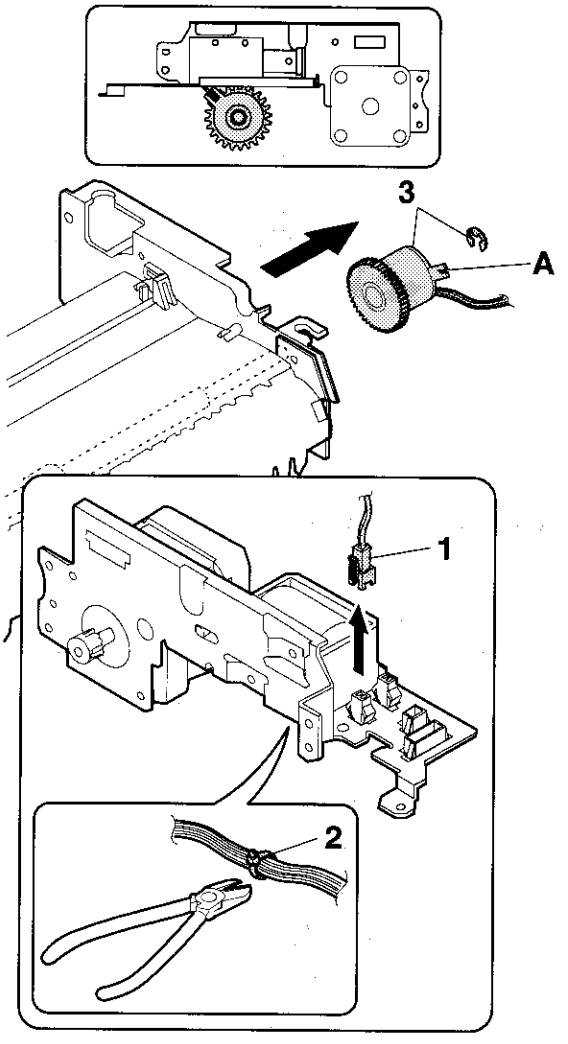
5) SPF motor



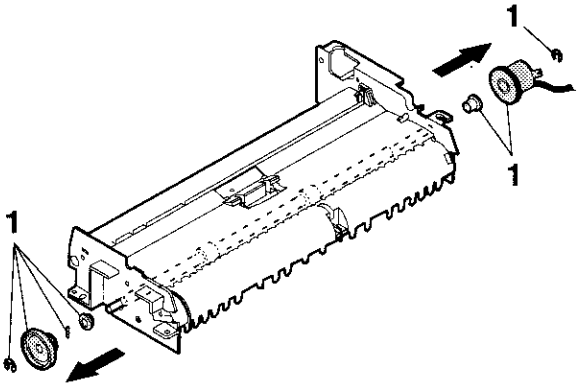
6. Transport section

1) Clutch

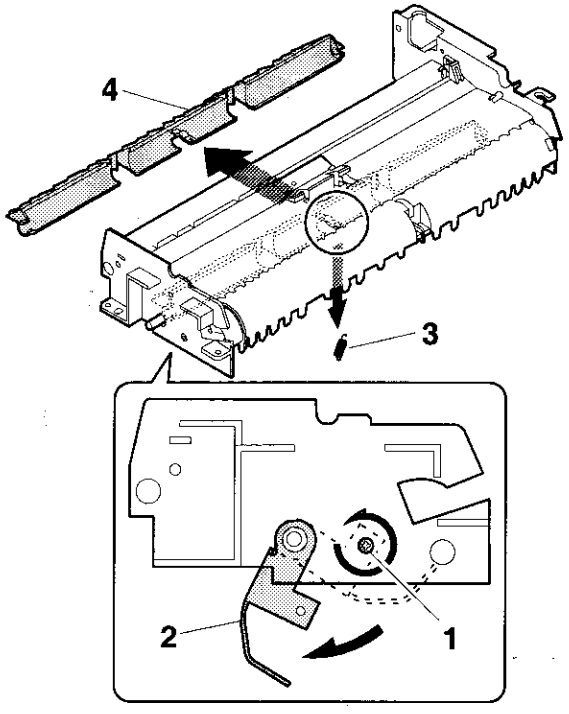
(Note) When assembling, check that the rib is in the clutch groove A and fix it with E-ring.



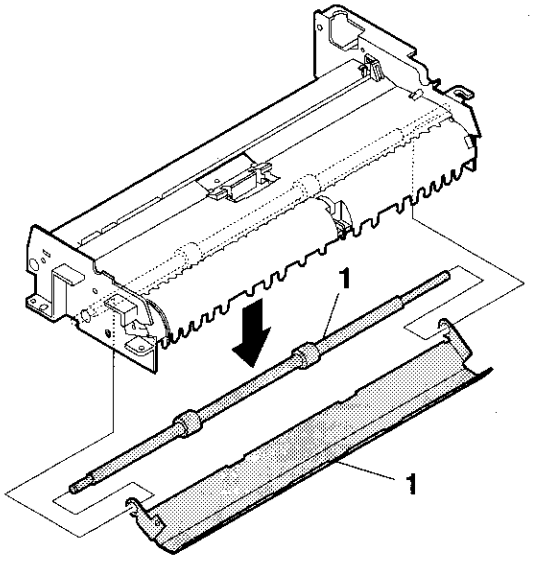
2) Transport roller gear



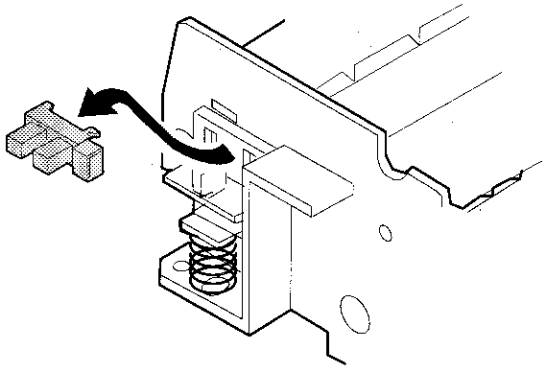
3) Reverse gate



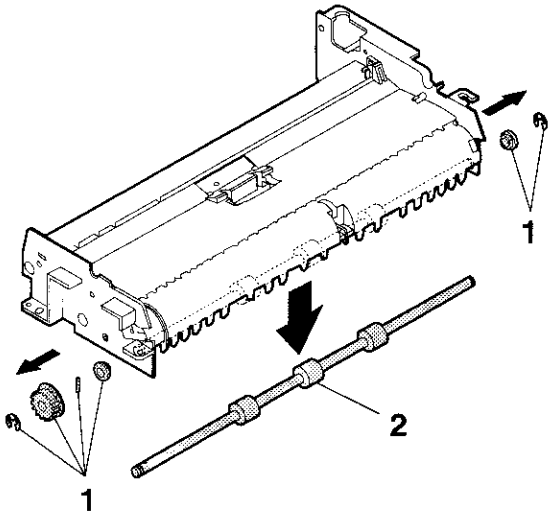
4) Transport roller



5) Book sensor

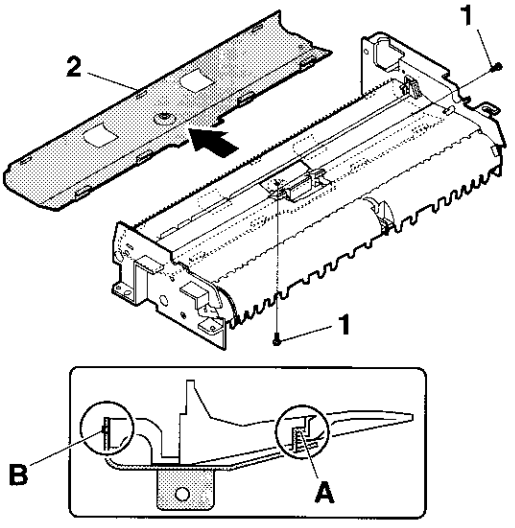


6) PS roller

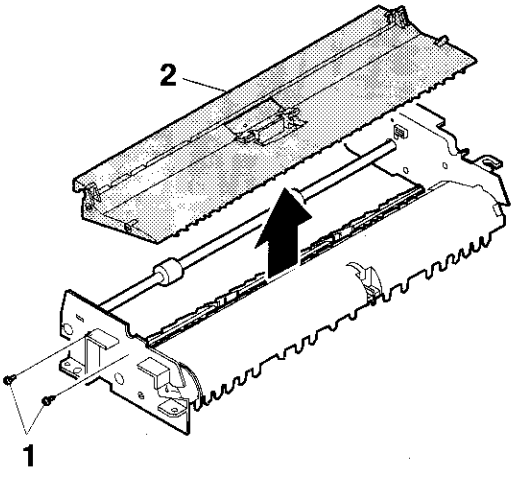


7) Paper feed paepr guide upper

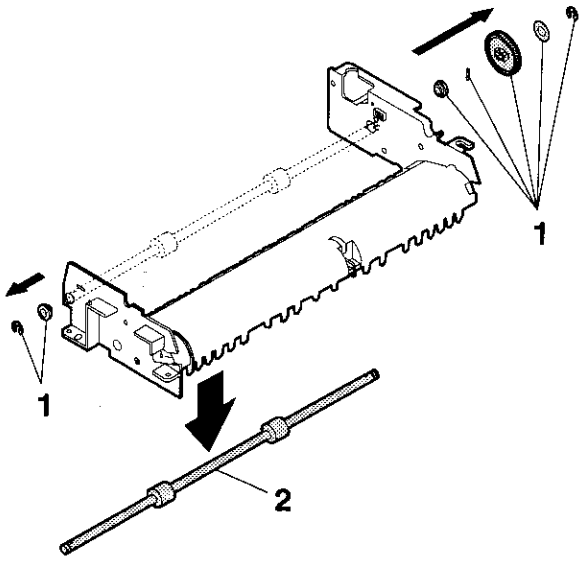
(Note) When assembling, check that the paper feed paper guide upper 2 is securely set to rib A and boss B.



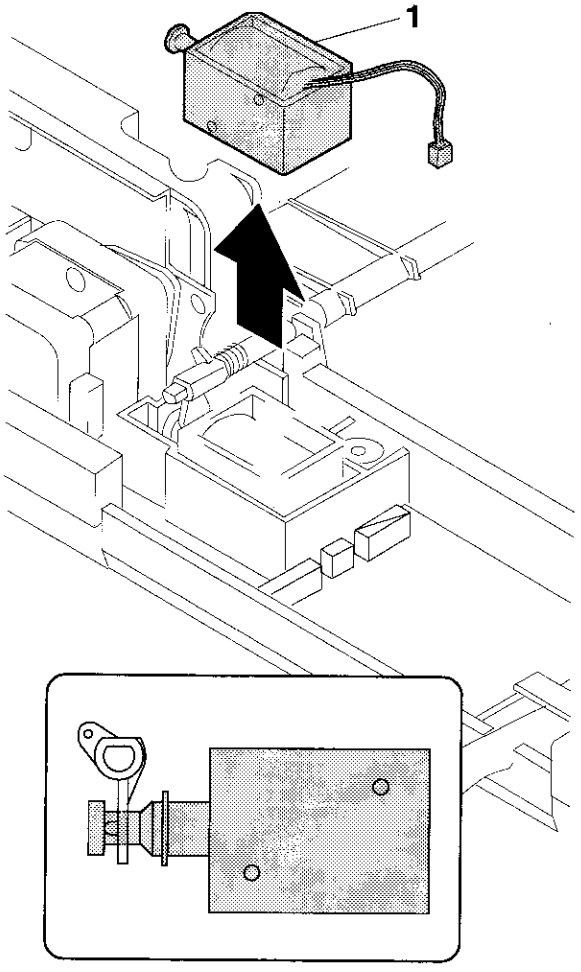
8) Paper feed paper guide upper



9) Paper exit roller



10) Gate solenoid

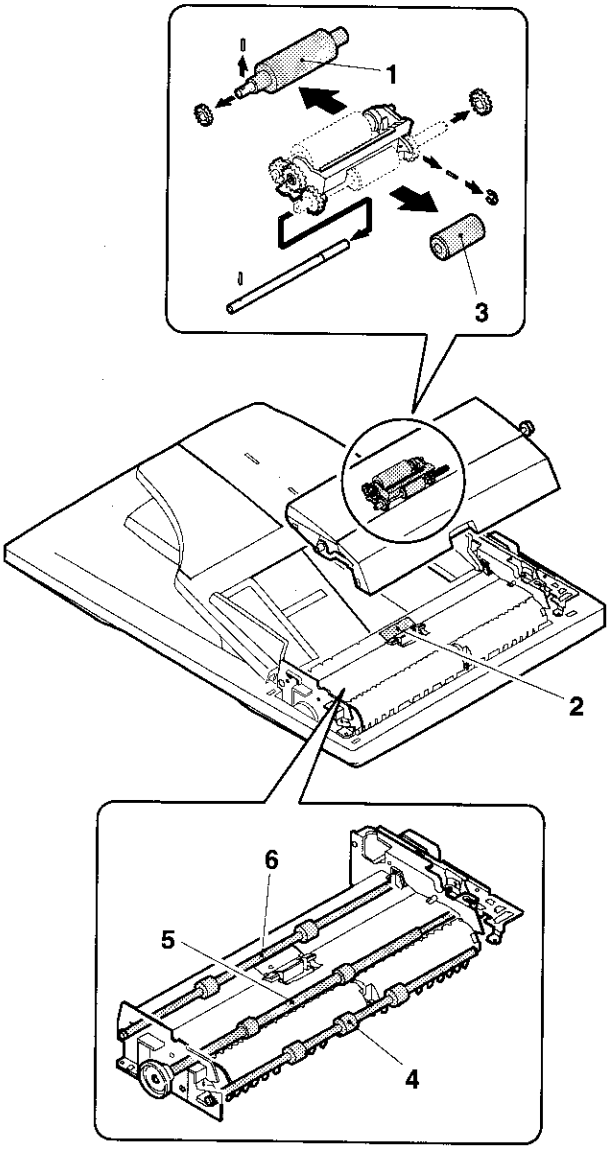


(Note) When assembling, check that the paper exit gate hook is set in the solenoid groove.

[8] MAINTENANCE

1. Maintenance parts

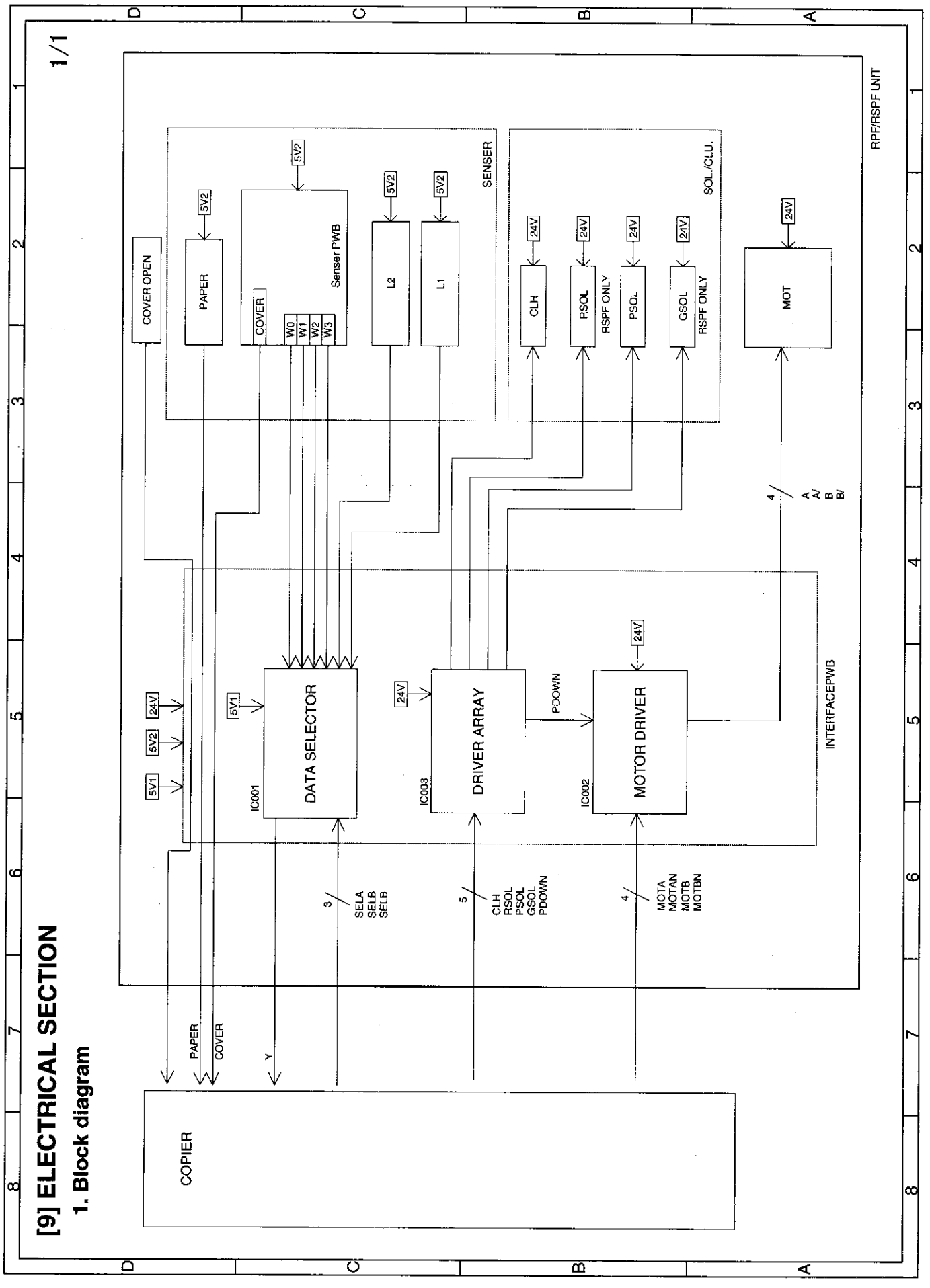
No.	Name	Work item	Service call	Remark
1	Pickup roller	Cleaning	O	
2	Separation pad	Cleaning	O	
3	Paper feed roller	Cleaning	O	
4	PS roller	Cleaning	O	
5	Transport roller	Cleaning	O	
6	Paper exit roller	Cleaning	O	



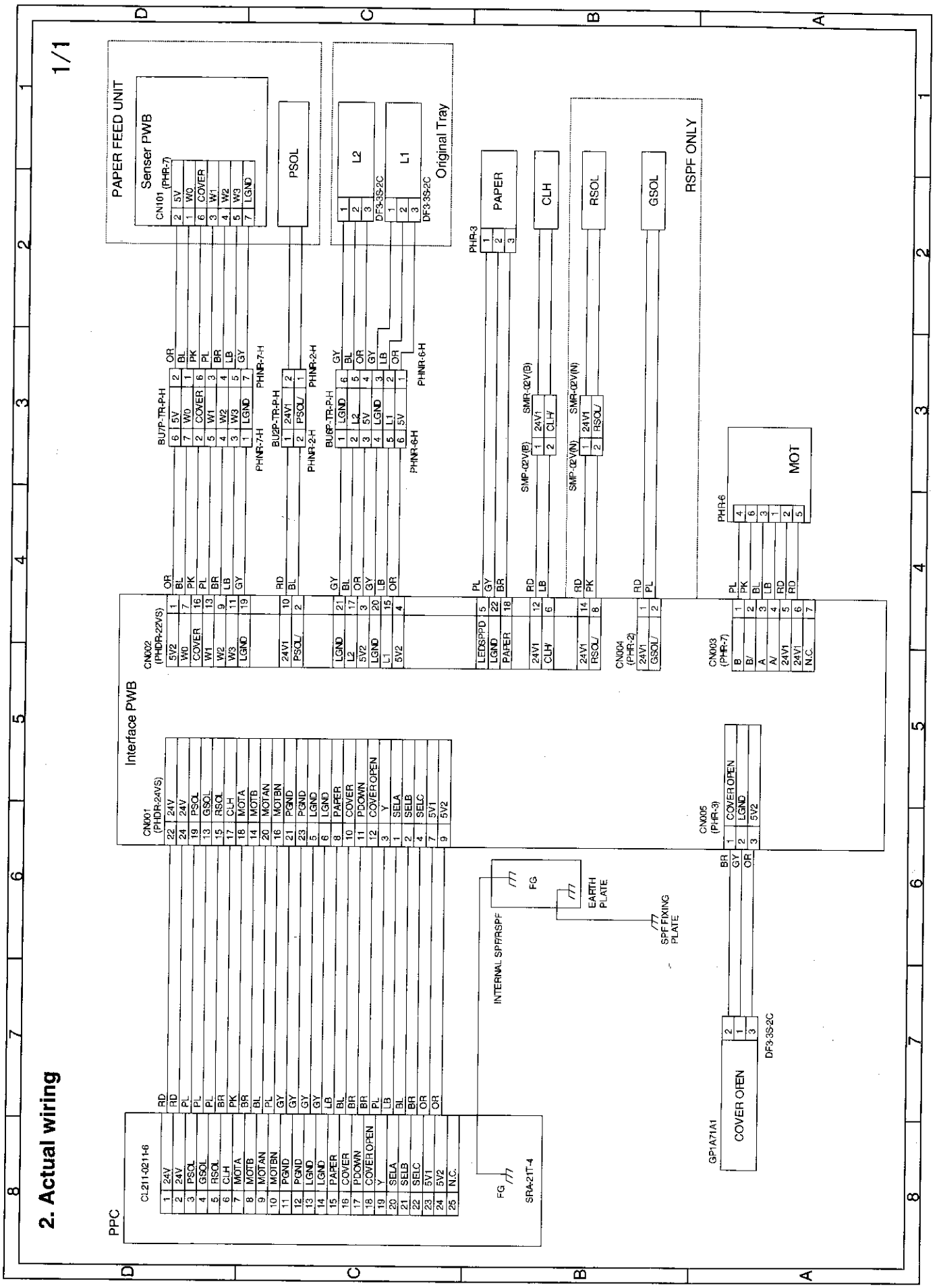
(Note) When performing maintenance, refer to [6] DISASSEMBLY AND ASSEMBLY.

[9] ELECTRICAL SECTION

1. Block diagram

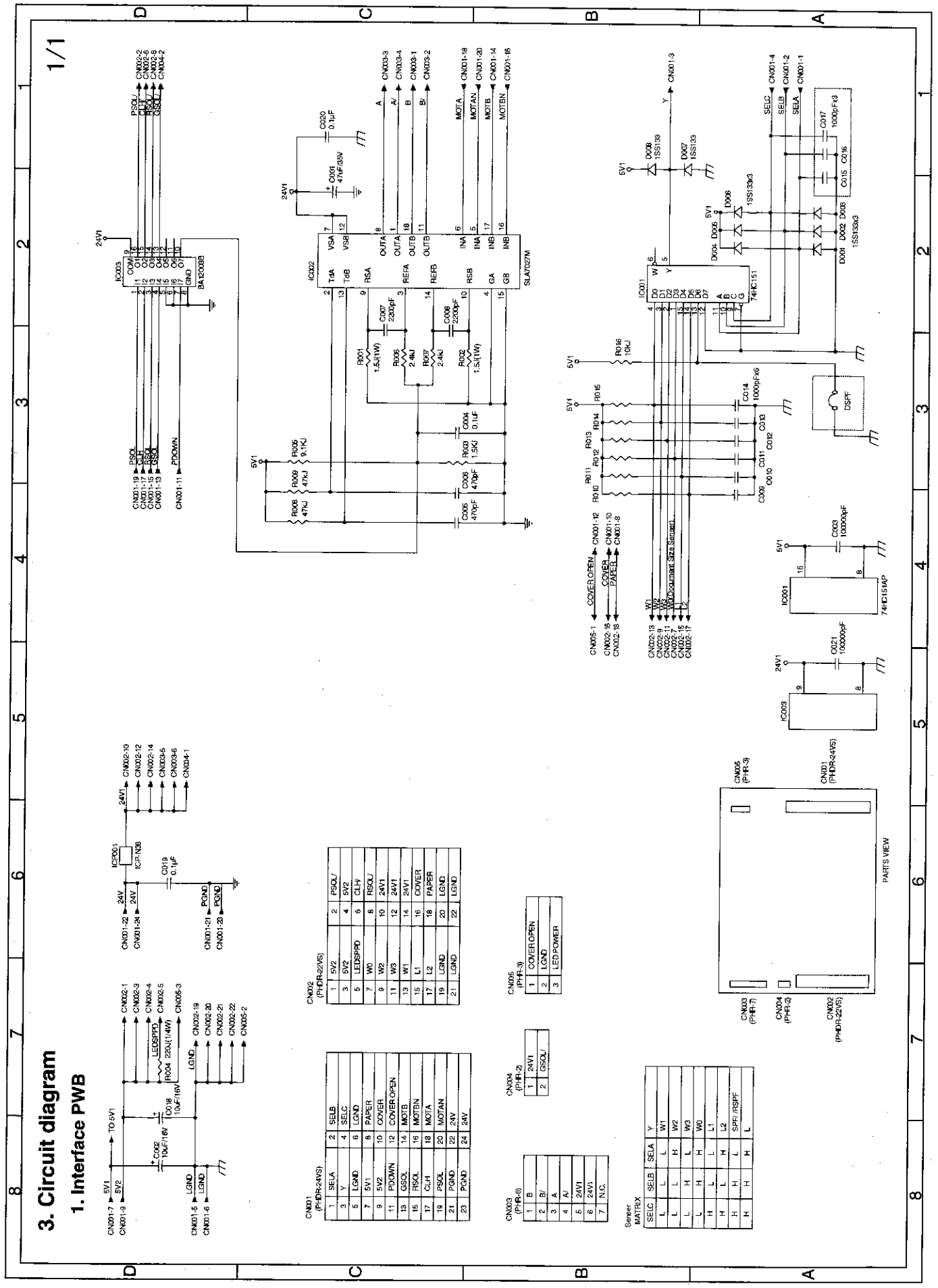


2. Actual wiring



3. Circuit diagram

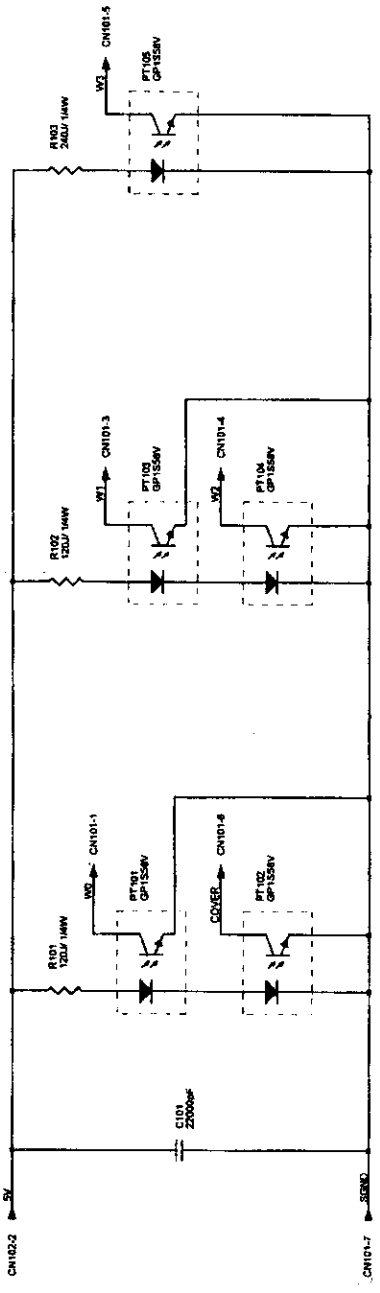
1. Interface PWB



3. Circuit diagram

2. Sensor PWB

1/1



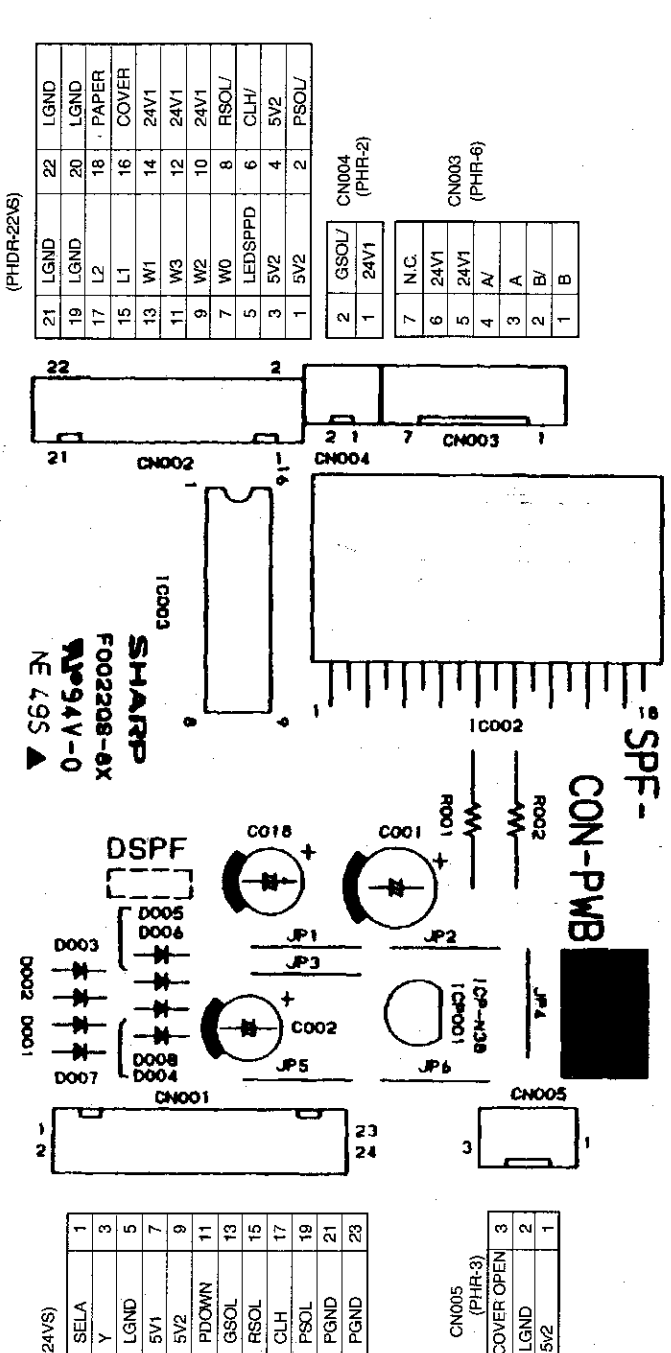
CN101
(PHR-7)

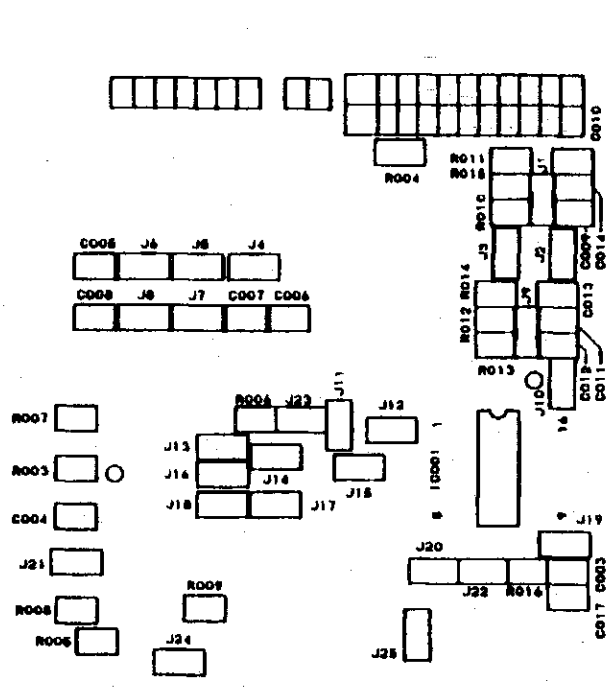
1	W0
2	5V
3	W1
4	W2
5	W3
6	COVER
7	SGND

4. Parts arrangement

[Parts surface]

[Solder surface]





21	LGND	22	LGND
19	LGND	20	LGND
17	L2	18	PAPER
15	L1	16	COVER
13	W1	14	24V1
11	W3	12	24V1
9	W2	10	24V1
7	W0	8	RSOL/
5	LEDSPPD	6	CLH/
3	5V2	4	5V2
1	5V2	2	PSOL/

2	GSOL/
1	24V1

7	N.C.
6	24V1
5	24V1
4	AV
3	A
2	B/
1	B

SELB	2	SELA	1
SELC	4	Y	3
LGND	6	LGND	5
PAPER	8	5V1	7
COVER	10	5V2	9
COVER OPEN	12	PDOWN	11
MOTB	14	GSOL	13
MOTBN	16	RSOL	15
MOTA	18	CLH	17
MOTAN	20	PSOL	19
24V	22	PGND	21
24V	24	PGND	23

COVER OPEN	3
LGND	2
5V2	1

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